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## (54) IMPROVEMENTS TO VEHICLE BODIES

(71) We, LAWRENCE DAVID LIMITED, a British company of 2 St Mary's Close, Bainton, Stamford, Lincolnshire, England, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:-

This invention relates to a vehicle body having an improved side rave, the body being a 'tilt body', particularly a T.I.R. tilt body. Such bodies have to be constructed in such a manner as to comply with International Regulations governing such vehicles in 'Through Customs Transit' with the load compartment officially sealed.

In the past a T.I.R. tilt body construction has consisted of a superstructure mounted on a conventional trailer chassis, such trailers being of either platform, semi-trailer or container base types, the superstructure comprising a framework of pillars, hoops and side-rails, the conveyed load being retained by the fitting of dropsides to the bottom of side apertures between the pillars, together with timber slats or gates above the dropsides. This whole superstructure is then covered by a suitable cloth cover or tarpaulin, commonly known as a 'tilt', the cover being retained in known fashion by means of eyelets provided along the edges of the cover which can be fitted over 'D'-rings mounted on the superstructure, the 'D'-rings protruding through the eyelets. A special continuous wire is then threaded through the protruding portions of the 'D'-rings, the two ends of the wire then being joined together and sealed.

It is a prerequisite for this type of vehicle body, according to the abovementioned International Regulations, that they must be tamper-proof so that unauthorised access to the load, for example by passing the hand and arm up beneath the wire and cover must be prevented. The regulations therefore

state that the cloth cover should overlap the solid sections of the superstructure to which it is attached by at least a distance of 250 mm. from the point at which the eyelets and 'D'-rings are positioned to the edge of the solid section. In order to achieve this in the past the 'D'-rings have been mounted on the dropsides which provide the 250 mm distance necessary. The tilt body structure has, therefore, had to include dropsides or some similar form of side fitting. However, the Regulations do allow scope for design innovation by saying that the 250 mm overlap requirement may be waived if the new design can be shown to effectively prevent access to the load by hand.

According to the present invention there is provided a vehicle body having a side rave extending longitudinally along a side of a platform of the vehicle body, said side rave comprising a strip defining an outer side face of the vehicle body platform, and having a longitudinally extending recess below the said face, sockets being formed at intervals in the said strip to receive vertically extending pillars to support a superstructure, and 'D'-rings being mounted in the recess for securing a cover to the body the arrangement being such that in use the cover is drawn around the said face and into the recess.

A central portion of the strip may be sloped back from the face to the recess or it may be of stepped configuration. Whatever the shape of this portion, however, it is preferably such as to provide a re-entrant surface at the bottom of each socket to receive and retain the lower end of a pillar.

Preferably the rave has a flange along each upper and lower edge so that it is of generally 'S'-shaped cross-section, and is adapted to be attached to the vehicle with the upper part of the 'S' forming the outer side face, sockets being formed at intervals in the upper part of the 'S' to receive the

lower ends of pillars which are shaped to abut against the central portion of the 'S', and with the lower opening of the S facing outwardly from the vehicle so as to form the recess to receive the lower edge of a cover or tilt, 'D'-rings being mounted in the recess at spaced intervals.

The term 'S'-shaped used in this connection is intended to generally cover sections including two oppositely facing channels joined by a common central member which forms one common side of both channels and which may for example be sloping or stepped. It includes sections which are a 'mirror image' of a letter 'S'. The term 'D' rings is intended to cover any generally ring-like members having a through aperture.

Because the lower ends of the superstructure pillars in the preferred arrangement are so shaped, they can be located in position in the side rave sections with a minimum of additional fixing devices so that they are easily dismountable.

Some embodiments of the invention will now be described by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is a perspective view from the front end side of a tilt body.

Figures 2 and 3 are cross sectional and perspective views respectively of a first type of tilt body side rave;

Figure 4 is a perspective view of a lower front corner of a tilt body incorporating the rave section of Figure 2;

Figure 5 is a perspective view of a side post affixed to the side rave of Figure 3;

Figure 6 is a perspective view of a lower rear corner of a tilt body;

Figure 7 is a perspective view of latching means for lateral ties;

Figure 8 is a cross-section through a modified preferred type of side rave;

Figure 9 is a vertical cross-section through the side rave of Figure 8 at the position of a pillar socket;

Figure 10 is a partial side elevation of the rave of Figure 9;

Figure 11 is a partial perspective view of the rave of Figure 8 attached to a vehicle, with a demountable superstructure pillar in position;

Figure 12 is a perspective view of a corner of a vehicle loading platform; and

Figure 13 is a perspective view of a vehicle semi-trailer.

Referring to the drawings the tilt body 1 shown in Figure 1 has a superstructure consisting of pillars 2 along two parallel longitudinal sides, connected at their lower ends to a base side rave 3 of the vehicle body, and at their upper ends to top longitudinal members 4. Roof top hoops 5 connect the members 4 and longitudinal roof

support slats 6 span the space between members 5. Load retaining slats 7 and gates 8 span the space at the sides of the superstructure between pillars 2 as does lateral tie members 9. A tilt cover 10 is stretched over the superstructure and a solid bulkhead 11 is provided at the front end.

As illustrated in Figures 2 and 3 the side raves are generally channel-shaped with an outer side face 16 and a longitudinally extending recess or an inset portion 12, and mounted in the inset portion 12 are 'D' shaped members 13 (see Figure 2). At the front end of the body, the solid bulkhead 11 as shown in Figure 4, has an inset portion 12a within which 'D' shaped members 13 are mounted. Figure 6 shows a rear corner of the body and an inset portion which extends across the rear end to join up with the inset portion of the side rave on the other side. In Figures 3 and 5 the D shaped members or 'rings' have been omitted from the drawings. The side raves 3 are in addition provided with a recess 3a transverse to the inset portion 1 for receiving a pillar 2. A pin 3b projects into the recess 3a and serves to help locate the pillar 2.

Figure 5 shows a mounting for a pillar 2 of the type which forms the subject of our co-pending British patent application No. 04989 (Serial No. 1497878) dated 6th February, 1975. In order to give extra strength to the superstructure, the mounting can include a nut 14 for locking purposes.

Figure 7 shows catches 15 which constitute the lateral tie members 9 and which can be used to secure the load retaining slats 7 to the support pillars 2. These slats 7 are used in the case of long vehicle bodies to add rigidity to the superstructure.

It will be clearly seen from figure 2 that when a tilt cover (not shown) is drawn down across the face 16 of the rave 3 into the inset portion 12, eyelets in the cover are placed over the 'D' shaped members 13 and a wire passed through the members 13 with a meandering path is drawn tightly to draw the cover into the inset portion 12 to make it impossible for a hand and arm to be passed between the secured cover and the face 16 of the rave 3 to obtain access to the load.

A modified, and preferred type of rave section is shown in Figure 8 and has a generally 'S'-shaped cross-section, which is reversed as seen from the end shown in the drawing, the top 17 and bottom 18 of the 'S' being squared off and the central connecting portion 19 being sloping. In addition to the 'S'-shaped part, a flange 20 is formed along the upper edge of the 'S' and a further flange 21 is formed along the lower edge of the section, to provide additional rigidity.

One type of vehicle to which the rave may be attached comprises a pair of elongate structural members (not shown) which form

the central load bearing part of the chassis and have cross members forming outriggers fixed to them at intervals along their length. The rave is connected to the outer ends of the outriggers as shown in Figure 8, which shows only the extreme end of an I-section outrigger 61, with the flange 20 of the rave resting on, and welded to the top surface of, the top flange of the outrigger. The rave is also connected at 62 to the end surface of the outrigger.

The lower opening 25 of the S-shaped member forms an inset portion 26 (Figure 10) running along the edge of the vehicle, and having D-shaped tilt retaining members 27 (Figure 11) fixed to it at intervals. The upper part of the S forms an outer side face for the platform, the opening 28 of the S facing towards the vehicle and having vertical channel section members 22, or the like, connected to it at intervals to form sockets for superstructure pillars.

The openings of these sockets are formed by cutting away portions 29 of the outer face of the S-shaped member as shown in Figures 10 and 11, down as far as the upper edge of sloping portion 19. As can be seen from Figure 11, the lower end 30 of the pillar 31 is angled so that it locates snugly against the sloping bottom of the socket which is formed by the sloping portion 19.

Since the end of the pillar is thus effectively located in position, only one other fixing point is necessary to securely retain the pillar, and this is provided by means of a bolt 32 passed through the pillar and the member 22 with its head recessed inside the pillar and accessible through a hole 33 in the front of the pillar. The bolt is threaded into a nut 34 welded to the rear of the member 22 (Figures 9 and 10).

Figure 12 shows a corner (for example a front corner) of the vehicle where the S-shaped member meets a vertical corner member 35 which, as can be seen from the drawing, can be a simple channel section.

Figure 13 shows a general view of a semi-trailer type of T.I.R. vehicle, incorporating side raves 36 in accordance with the invention. As can be seen from the drawing, the side raves 36 are attached to the edges of a load-bearing base 38 which has sets of wheels 40 at its rear end, the front end 42 being adapted, by means not shown, for connection to a towing vehicle.

The raves incorporate sockets 44 in which there are mounted pillars 46 which support horizontal members 48 on each side, defining the roof of the vehicle. The sides of the vehicle are covered, in use, by a tilt or tarpaulin 50 which is shown in the drawing in the rolled back position in which access can be gained to the gates 52, 54 etc. enclosing the load. It will be understood that when the tilt is closed, the edge is held in position

in the recess 56 of the side rave by passing eyelets in the edge of the tilt over the rings 58, and threading a wire through the rings. (The normal position of the lower part of the tilt is shown as a dashed line in Figure 8, with a retaining wire 60 passed through the rings.)

The drawing also shows a pillar 46 being removed as described in our copending application no. 48452/75 (Serial No. 1,522,302), to allow access to the load along the whole length of the space between gates 52 and 54.

#### WHAT WE CLAIM IS:-

1. A vehicle body having a side rave extending longitudinally along a side of a platform of the vehicle body, said side rave comprising a strip defining an outer side face of the vehicle body platform, and having a longitudinally extending recess below the said face, sockets being formed at intervals in the said strip to receive vertically extending pillars to support a superstructure, and 'D'-rings being mounted in the recess for securing a cover to the body the arrangement being such that in use the cover is drawn around the said face and into the recess.

2. A body as claimed in claim 1, in which a central portion of the strip is of such a shape as to provide a re-entrant surface at the bottom of each socket, to receive and retain the lower end of a correspondingly shaped pillar.

3. A body as claimed in claim 2, in which the central portion of the strip is stepped back from the face to the recess, so as to mate with the lower end of a pillar which is correspondingly stepped.

4. A body as claimed in claim 2, in which the central portion of the strip is sloped back from the face to the recess, so as to mate with the lower end of a pillar which is correspondingly tapered.

5. A body as claimed in any preceding claim, in which the strip has a flange along each extreme upper and lower edge which is so directed that the strip is generally 'S'-shaped in cross-section.

6. A body as claimed in any preceding claim, in which each socket is provided with threaded retaining means which is adapted to cooperate with a bolt mounted in the pillar so as to retain the pillar in the socket.

7. A body including a pair of side raves as claimed in any preceding claim.

8. A body as claimed in claim 7, further comprising a removable superstructure including a plurality of pillars whose lower ends are shaped so as to mate with the sockets in the rave sections.

9. A vehicle body substantially as herein described with reference to Figures 2, 3 and

5 of the accompanying drawings.

10. A vehicle body substantially as herein described with reference to Figures 8, 9 10 and 11 of the accompanying drawings.

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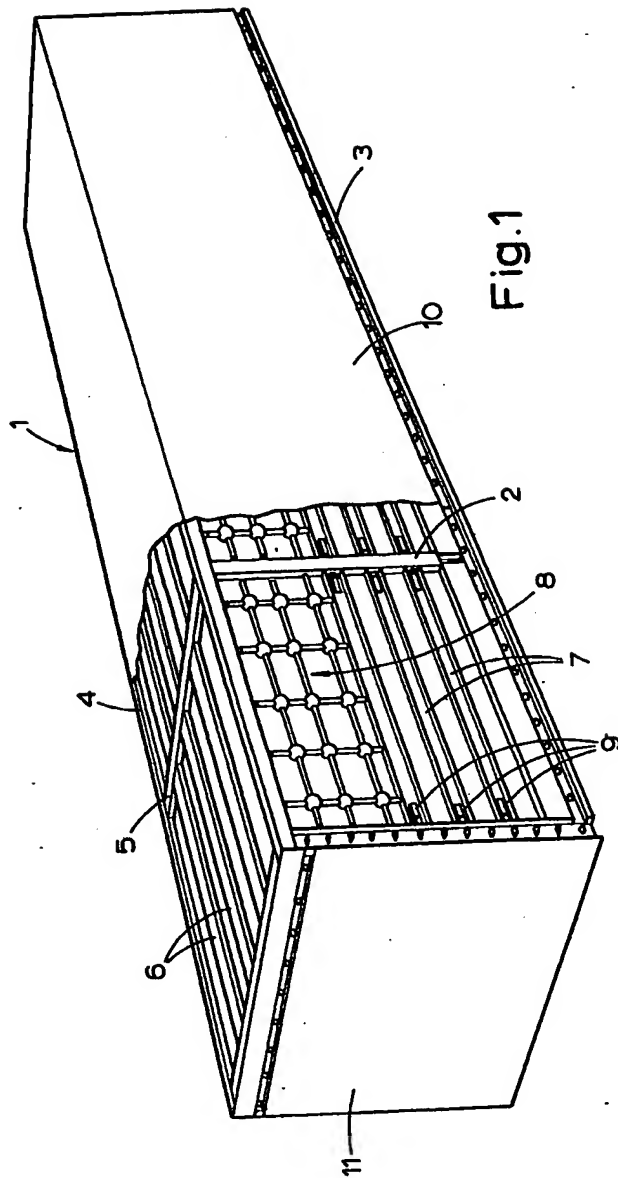
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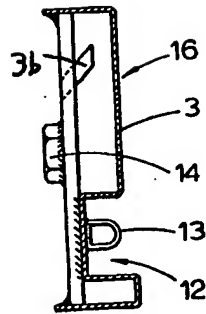


Fig.2

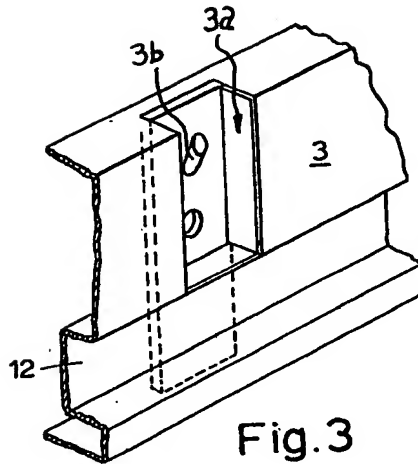


Fig.3

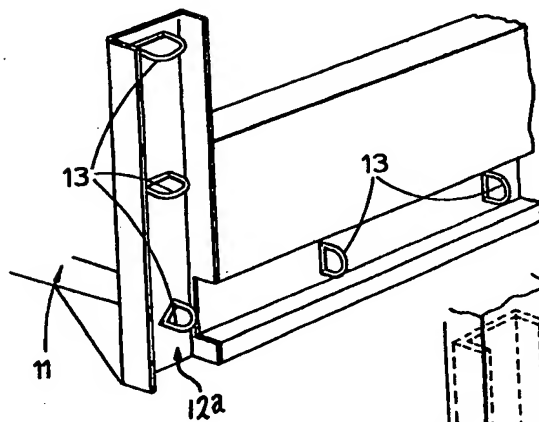
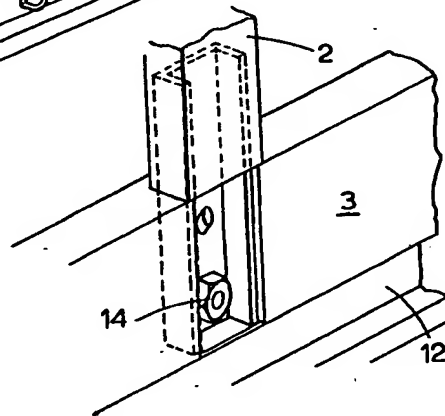


Fig.4

Fig.5



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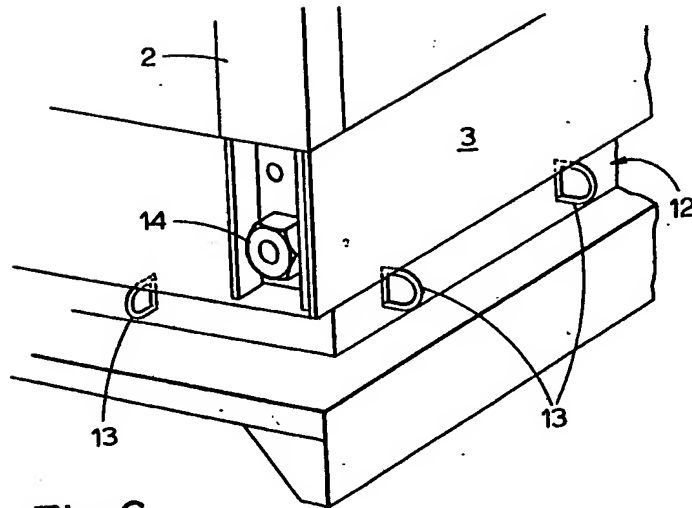


Fig. 6

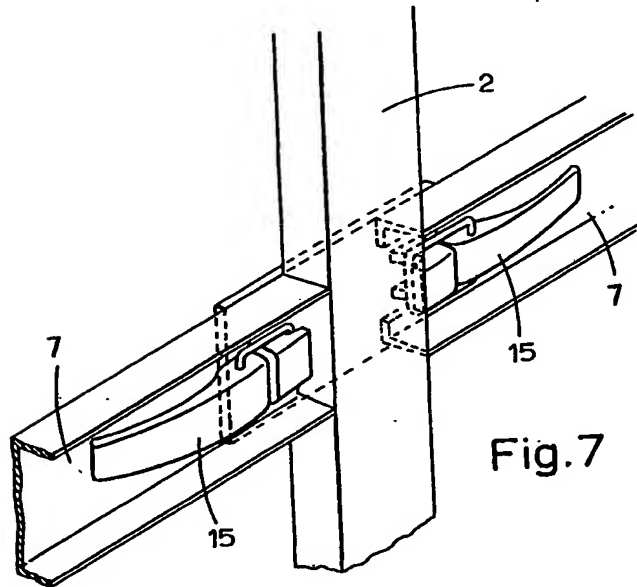


Fig. 7

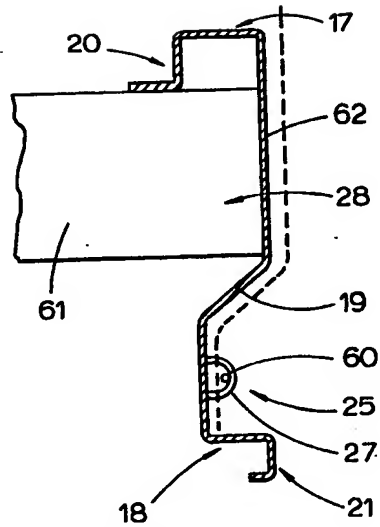


Fig. 8

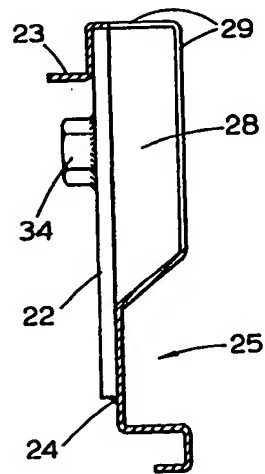


Fig. 9

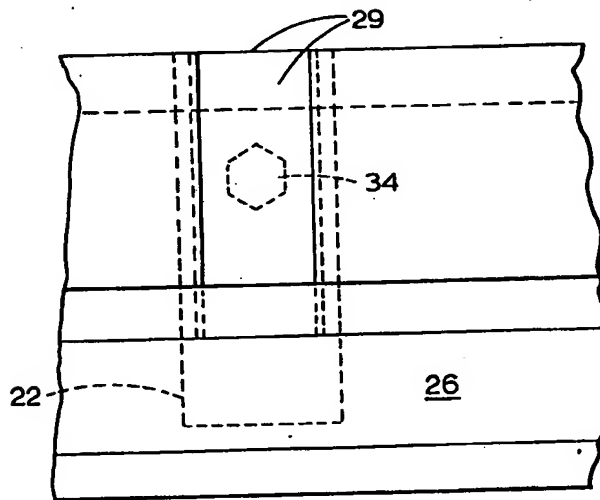
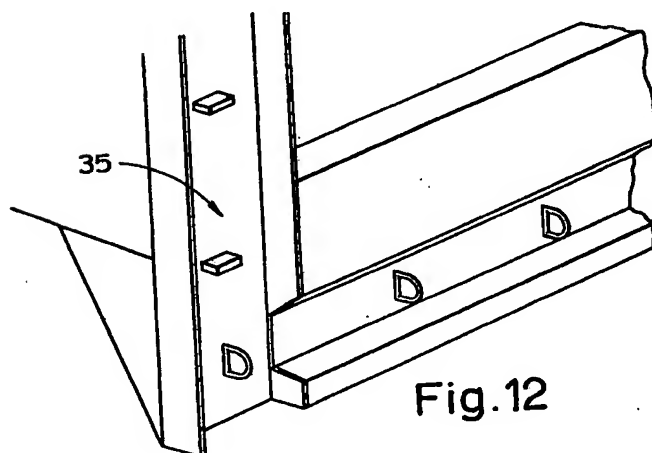
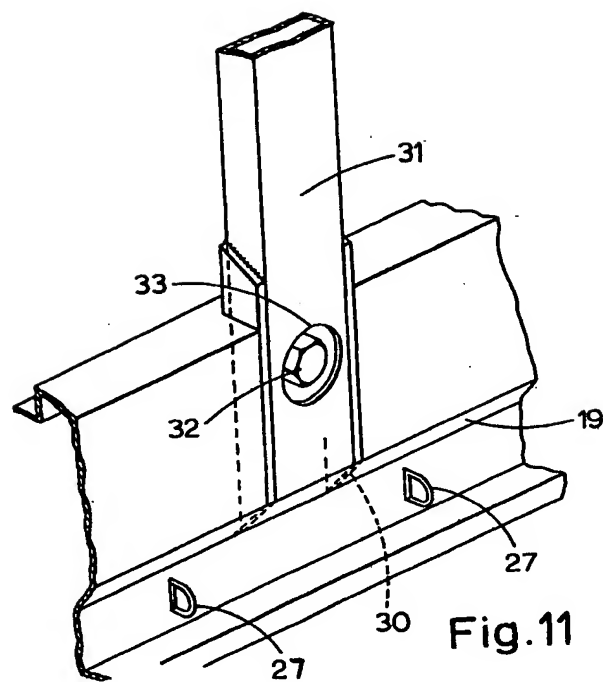


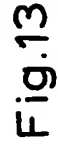
Fig. 10





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**Fig. 13**